EFFECT OF RELAXATION TRAINING ON LEVELS OF FIELD DEPENDENCE-INDEPENDENCE AND READING ACHIEVEMENT OF ELEMENTARY SCHOOL CHILDREN

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Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
DOCTOR OF EDUCATION
July, 1984

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ACKNOWLEDGMENTS

The completion of my doctorate could not have been accomplished without the assisstance of many people. I owe much to my wife and best friend, Naomi, for all her encouragement and support during the years of my graduate study. To my children, Sabrina, Todd, and Seth for their patience and understanding. I share the accomplishment of this degree with these four.

My deep appreciation goes to my chairperson, Dr. Judy Dobson for the sincere encouragement, support and guidance she offered throughout my doctorate program. A special thanks to Dr. Jo Campbell, Dr. John Dillard, Dr. Joe Pearl, and Dr. Julia McHale for serving as committee members and for offering me their consistent support and availability. Dr. Campbell's expertise in research and statistics was especially helpful and appreciated.

I am in indebted to Naomi and also Valorie Harris who served as facilitators during the experimental exercises and to Carol Williams, administrator at Perry Elementary School, for her assistance and for permitting me to conduct the experiment.

A final word of thanks goes to my staff members, Gale Fry and Jerri Arthur, who endured me and typed many words in preparation of this paper. A special word of thanks to Max Edgar, a long time friend, for the many times he encouraged me and for his aid and assistance in so many ways.

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CHAPTER I

INTRODUCTION

Two decades past Rugg (1963) (p. 102) wrote, "Nothing is more basic than the role of the body. We not only move with it, we think with it, feel with it, imagine with it". The philosophy of education has been to expend energy and resources to develop and individual's rational, analytical, critical and linear capabilities. Contemporary education inculcates fear, tension and forced attention in an attempt to facilitate learning (Jacobson, 1957). McKim (1973) related forced attention to the arena of the classroom in which individuals, regardless of differences in personal interests, are forced to pay attention, equally and collectively.

People develop their own psychological and physiological manner of reaction to situations in which fear and tension are generated (Selye, 1974). Commonly, individuals may tense their bodies in an effort to face a real or imagined threat (Selye, 1974, Pelletier, 1977). They begin to breathe rapidly, their back and neck muscles tense and their heart rate increases (Selye,1974). When one imagines or recalls scenes, muscles are tensed, as if one were actually involved in the activity (Whatmore & Kohli, 1968). Consequently, Jacobson maintains (1957) that the use of techniques to physically relax is an excellent way to break the cycle of fear, worry and tension. Individuals are better able to utilize full energy and attention when they are able to relax. McKim (1973)

states that the development of skill in any field has two important principles; (a) relaxation and (b) attention. The state of relaxed attention occurs when relaxation and attention are brought to a task in relative balance. Relaxation experts generally agree that the art of relaxation and voluntary attention are skills which can be learned (McKim, 1973).

Significance of the Study

The manner in which people perceive an object in relation to its surrounding environment was the subject of an indepth study by Witkin (1950). The results of his investigation using the rod-and-frame instrument as well as other instruments, has developed the concept of field dependence/independence. How people viewed their perceptual world could then be divided into one or two frames of reference, each with their own identifying characteristic (Witkin, Dyk, Faterson, Goodenough, & Karp, 1962). Those individuals revealing substantial error on the instrument have been recognized as being significantly dependent on the environment and on the average have a global, diffuse, inexact perception of their surroundings, Other individuals, better able to discover and utilize discrete elements of the environment were described as field independent. This type of individual was better able to deal with the part as an independent unit (Witkin, 1950; et al., 1962).

As early as 1965, Witkin suggested that educational evaluations,

placement and method of instruction, consider the organizing style of the student. Messich (1969) also indicated the need for greater emphasis to be placed on style and instruction. Significant relationships were revealed by Gill, Herdtner, and Lough (1968) between first grade reading success and field independence. These findings were confirmed by Watson (1969) and Stuart (1967). Researchers (Gale & Lynn, 1972; Keogh, 1971) have worked on the relationship between those classified as poor readers and characteristics which describe either the field dependent or field independent student. These studies have indicated that poor readers generally exhibit inferior performance when stimuli are embedded in extraneous background and when the student is presented with mulitple stimulus modalities. These studies not only suggest the role of perceptual style but also indicate that distractibility in sensory and motor areas play a role in reading difficulities.

The present study is designed to provide additional information regarding perceptual style and reading achievement of children identified as reading below expected grade level. The present investigation is important in that findings could be used to assist educators understand how field dependent and field independent children function. Curriculum could be designed accordingly. The techniques in the study can be easily adapted to the classroom to assist children change or increase their perceptual style for

greater learning development. Additionally, the information gathered from this study provides a better understanding of and potential to further research on combinations of treatment modalities, number of sessions, and period of time devoted to the training.

Statement of the Problem

Few studies have directly approached the problem of field dependence/independence as a function of reading achievement. Relaxation training, progressive relaxation, meditation, and Zen (Benson, Beary, & Carol, 1974) all have engaged in procedures and instructions which have helped persons focus their attention. As a means of focusing attention on internal stimuli, relaxation training may therefore be a useful method which can be learned and generalized to other situations. These areas may include reading achievement where the effects of distractibility might be lessened through the focusing of one's attention.

The current study seeks to explore this state of relaxation and specifically to see the academic values flowing from such a state of relaxation. What is the effect on perceptual and cognitive skills such as reading comprehension? Does relaxation training bring about a cognitive reorganization which allows the student to use his abilities more efficiently? More specifically, the present investigation seeks to identify students who are reading below expected grade level and on the basis of their prior reading

achievement divide them into high and low achievers.

The stated problem then is to determine what effect a program of relaxation training would have on the reading comprehension of students identified as high or low reading achievers. Additionally, what effect would a program of relaxation training have on the field dependence/independence of students identified as high or low achievers.

Limitations of the Study

The following limitations are inherent in the design of this study.

(a) This study focuses on children identified as reading below grade level in grades five and six at one elementary school.

(b) It is assumed that the selected samples are representative of their respective populations.

(c) The findings of this study should not be generalized beyond the two grade levels from which the samples were drawn.

(d) The results of this study are limited to the type of relaxation training described as the treatment.

Definition of Terms

1. Field Dependence refers to the degree to which an individual emphasized external cues in making judgments on perceptual tasks as measured by the Children's Embedded Figures Test (CEFT) (Witkin, Oltman, Raskin, & Karp, 1971).

2. Field Independence refers to the degree to which an individual emphasized internal cues in making judgments on perceptual tasks as measured by the CEFT (Witkin et al., 1971).

3. Reading Comprehension refers to the grade level at which children are currently reading as measured by scores on the Gates-MacGinitie Test (GMRT) (Gates & MacGinitie, 1965).

4. Relaxation Training refers to a training technique consisting of muscle tension/release similar to Jacobson's Progressive Relaxation technique (Budzynski, 1974), followed by an audio visualization exercise as presented by Lupin (1972).

Null Hypotheses

The following null hypotheses will be tested at the .05 level of sighnificance:

Hypotheses 1: There will be no differential effects of an experimental treatment (relaxation training), a placebo (group counseling), and no treatment on the reading achievement of students reading below grade level whose reading achievement is above the groups' median and for those students whose reading achievement is below the groups' median as measured by the Gates-MacGinitie Reading Test.

Hypotheses 2. There will be no differential effects of an experimental treatment (relaxation training), a placebo (group counseling), and no treatment on field dependence/independence of students reading below grade level whose reading achievement

is below the groups' median as measured by the Children's Embedded Figures Test.

Organization of the Study

The present chapter included the introduction, significance of the study, statement of the problem, limitations of the study and the hypotheses. Chapter II contains a literature review of the field dependent/independent concept and relaxation training. Chapter III contains a description of the instruments, population and sample, the data collection method, and the statistical procedures used for data analysis. The results of the analysis of the variables of field dependence/independence and reading achievement for groups in the study, and a discussion of results as related to each hypothesis are presented in Chapter IV. Chapter V includes a summary, conclusions, and recommendations for future research.

CHAPTER II

REVIEW OF THE LITERATURE

In this chapter, literature related to the study is reviewed. First, the concept of field dependence/independence is addressed. Next a review of research related to the concept of field dependence/independence, relaxation training and related modalities are presented.

Field Dependence/Independence

The cognitive construct, psychological differentiation, has emerged from the research of Witkin, Dky, Faterson, Goodenough, and Karp (1962). Psychological differentiation refers to the degree to which an individual either emphasizes internal cues (field independence) or external cues (field dependence) in making judgments on perceptual tasks. Psychological differentiation is considered to be a rather stable trait related to the performance of cognitive tasks. Davis and Frank (1979) state that cognitive restructuring may involve three separate but related operations

> (1) A breaking up of the organization of a stimulus complex so that its elements can be operated upon either separately or in new combinations, (2) providing structure for and ambiguous stimulus complex and, (3) providing a structure different from that implied by the inherent structure of the stimulus complex (p. 469).

Field independent students are expected to do better than field dependent students when restructuring or reorganizing the content would be required for success on a particular task (Witkin, Moore, Goodenough, & Cox, 1977). The field dependent/field independent

concept has been further described as a characteristic way in which individuals organize their perceptual style and cognitive strategies for learning.

Field dependent persons have been considered to be highly influenced by global aspects of their perceptual world. The style of field independent people have been considered to be differentiated, analytical, and they often evidence the ability to overcome the influence of an embedded context. Individuals with this perceptual style have been considered to be able to use discrete elements of the field and be less influenced by overall characteristics of the background (Witkin et al., 1962). Culbertson and Wille (1978), in comparing the two styles, suggested that field independent persons may be more likely to be better at focusing attention on important or significant details in situations than field dependent individuals. Mussen, Conger, and Kagan (1963) have suggested the area of reading as being one in which an analytic orientation would be necessary for higher performance.

Children with learning problems have often been cited in the literature as having disturbances of perceptual and spatial organization (de Hirsch, 1964-65; Frostig, 1963, Kephart, 1960). A total of 27 boys with serious learning and behavioral disorders and 25 boys with moderate learning problems were used in Keogh and

and Donlon's (1972) research of field dependence/independence and reflection/impulsivity. The study was designed to investigate spatial-perceptual abilities of diagnosed learning disabled children. One group of subjects were boys from white middle socioeconomic status families and were within a normal IQ score range. This group had severe, persistent learning problems with associated behavioral and/or emotional disturbances. A second group of subjects was composed of boys having mild to moderate diagnosed learning disabilities and who were enrolled in a summer program at a special school for reading disordered boys. They attended regular class during the school year. The range of ages was 8-0 to 13-9 for the two groups.

The Portable Rod and Frame Test, the Matching Familiar Figure Test, and Pattern Walking Test were used in the Keogh and Donlon's (1972) experiment. Results of this study revealed no significant differences between the severe and moderate learning disabled groups on the Rod and Frame or Pattern Walking measures. Field dependence was characteristic of boys in both the severe and mild learning disabled groups. The severe learning disabled group was more impulsive than the moderate learning disabled group. Impulsivity was indicated by significantly faster times and more errors on the measures. On each of the measures, the performance of the severe learning disabled subjects became increasingly weaker across

trials. Keogh and Donlon (1972) (p.335) suggested "...heightened anxiety, poor motivation or inability to maintain attention" as possible reasons for the poor performance. The authors further suggested that accurate field differentiation and organization and the ability to control speed of response was needed for successful school learning. Furthermore, in Keogh and Donlon's (1972) study, the subjects with mild learning problems had lowered performance on one of the functions, whereas the severe learning disabled subjects manifested disturbance on both functions.

Gale and Lynn's (1972) developmental study of attention involved 612 children in the age range of 7 years 4 months to 13 years 6 months. The subjects were administered and attention task, intelligence tests, Raven's Coloured Progressive Matrices, and a modified version of the Crichton Vocabulary Scale and a personality test, the Junior Eysenck Personality Inventory.

The attention task was made up of listening to a prepared tape of a continuous series of random letters presented at the rate of two every three seconds for a period of 40 minutes. Findings of this study appeared to indicate a relationship between sex and rate of development. The students' capacity for maintaining attention increased with age. Along with such an increase, performance was noted to accelerate between the ages of 8 to 9 years. The authors pointed out that girls gave consistently higher performance

than boys, but this difference decreased with age and during the ages of 8 to 11 years, age was no longer significant. Gale and Lynn's (1972) study suggested that reading difficulities may be related developmentally to a person's ability to attend.

Tanner (1961) has suggested that such differences in performance between sexes may be due to developmental growth rate. While boys have been generally reported as having greater problems with reading, Kagan (1964) points out that the problems were likely associated with their perception of school.

Polk and Goldstein (1980) selected 15 early readers at the beginning of the school year through a procedure involving the administration of the Peabody Picture Vocabulary Test (PPVT),the Durkin Screening Test and the Gates-MacGinitie Reading Test. These children were classified as early readers and were matched with 15 non-early readers on age, sex and PPVT scores. The 30 children were then given a battery of six standard Piagetian measures of concrete operations: conservation of weight, mass, length and number, a task combining conservation of weight, mass and length, and a measure of transitivity. The follow-up test using the Gates-MacGinitie Reading Test was given at the end of the same school year.

On the initial Piagetian task the early readers were found to have scored significantly higher than the non-early readers.

On the follow-up reading achievement test, the early readers had a mean score corresponding to a grade level of 3.4, while the non-early readers had a mean score corresponding to a grade level of 2.6. The scores indicated that the early readers were maintaining their initial advantage in reading ability.

The results of this study indicated that early readers were more likely to be advanced in cognitive development as measured by these Piagetian tasks of concrete operations than were non-early reading children. These conclusions are consistent with earlier findings by Briggs and Elkind (1973). These studies appear to point out individual differences in growth patterns and cognitive styles. Through investigations of the development of formal operational reasoning abilities (Kuhn & Angelev, 1976; Lawson & Nordland, 1976; Martorano, 1977) have shown that no more than 50 per cent of the children in this age range actually perform at a formal operational level. In fact, there appears to be little evidence to support the proposition that preadolescents and young adolescents experience formal operational reasoning abilities emergence at the same time as their peers (Kuhn & Angelev, 1976, Roberge & Flexer, 1979).

A study by Flexer and Roberge (1980) focused on the influence of field dependence/independence on the development of formal operational thought during early adolescent years. Previous research (Witkin, Goodenough & Karp, 1967) favored males on

measures of field dependence/independence during the growth years. However, Flexer and Roberge (1980) found that only about 24 per cent of the variance on Group Embedded Figures Test (GEFT) scores, at each grade level, was attributable to variance in IQ scores. This would indicate a considerable amount of unexplained variance in GEFT performance.

Relaxation

The family of therapies involving relaxation methods which incorporate the decrease of muscle tonus throughout the body is becoming a more useful therapeutic tool among therapists (Walker, 1975). This group of methods include, among others, progressive relaxation (Jacobson, 1938, 1964, 1970), autogenic therapy (Luthe, 1969), meditation (Otis, 1974) and biofeedback (Patel, 1977). Although the method of the techniques tend to vary in later stages, the initial procedures and primary functions tend to remain similar. All of these modes engage in procedures and instructions which lead persons to a focusing of attentional states. Relaxation training, used as a means of focusing attention on internal stimuli, may therefore be a useful method of training amd may be transferred to other situations such as poor reading responses in which the negative effects of distractibility could be lessened through the focusing of one's attention.

Relaxation training has been successfully applied to a wide

variety of problems in adults. The training has been used in the reduction of test anxiety (Russell, Miller & June, 1974), control fear of public speaking (Weissberg, 1975), and insomnia (Haynes, Woodward, Moran & Alexander, 1974).

Relaxation training has been effective in the treatment of children with anxiety (Miller, 1972), as well as various sleep disturbances (Gershman & Clouser, 1974, Ribordy & Denny, 1977). Carter and Synolds (1974) have been successful in improving the quality of handwriting in children who have minimal brain dysfunction with the use of relaxation training. Researchers, (Lupin, Braud, Braud & Duer, 1976; Klein & Deffenbacker, 1977) have also used relaxation training to reduce symptoms of hyperactivity in children. The characteristics of hyperactive children, such as incessant shifts of attention, poor academic performance, and excessive physical activity, have often been found in children who are inferior readers (Gale & Lynn, 1972; Keogh 1971; Noland & Schuldt, 1971).

Culbertson and Wille's (1978) study on relaxation training sought to evaluate the effectiveness of a short term program in producing change in elementary school children in terms of attention related skills associated with reading tasks in the classroom. They hypothesized that: (a) relaxation training would decrease percentages of offtask behavior in children undergoing treatment, (b) there would be a percentage increase of correct responding on the SRA Reading Lab Series, and (c) relaxation training would

produce changes in a positive direction in teacher rating of subject's classroom behaviors during reading instruction on selected areas of the Devereux Elementary School Behavior Rating Scale, and (d) decreased scores on the EFT would decrease indicating a movement toward a more field independent perceptual style.

In Culbertson and Wille's (1978) research, four elementary school children from the fifth grade were used as subjects. Subjects were drawn from a reading class at a level below the expected fifth grade achievement level. The four subjects were chosen randomly from that class and were randomly assigned to the order of treatment initiation. The authors used a relaxation training technique similar to Jacobson's Progressive Relaxation method and followed this activity by a variation of Benson's "relaxation-response" technique (Benson, Beary & Carol, 1974). This technique consisted of sitting quietly with eyes closed, with mental focus on the word "calm" during exhalation and with a passive, unforced attitude toward the success of relaxation. Each child received twenty minute session. Subject One received three weeks of training, Subject Two received two weeks and Subject Three received one week of training. The subjects were also encouraged to practice independently, especially in anxiety producing situations and prior to the beginning of reading class. Additionally, the experimenter conducted an off-day classroom relaxation period of

approximately three minutes for the experimental subjects.

With regard to attending behaviors, subjects were observed for a ten second period followed by a five second recording period. Each subject was observed for a total of 20 observations per subject per day for a period of 20 days, the duration of the research period. The data was treated as percentage of total observations per day and scored as off-task. When pre and post relaxation training periods were compared on off-task behavior, the three experimental subjects demonstrated decreases ranging for 11 per cent to 13 per cent. All four subjects produced substantial score reduction on the EFT. Only one of the experimental subjects indicated an increase on the reading achievement test while the other two decreased. The control subject remained constant.

The authors concluded that the results appeared to indicate that the usefulness of a program of relaxation training could be beneficial in the production of overt attending behavior. The increase in attending behavior was seen as a facilitative factor in increasing reading skill. Culbertson and Wille's (1978) viewed relaxation training as producing short term effects in terms of work style. They concluded that the effects might be useful in producing more long term increases in reading skills.

While this single subject design lent itself to a subjective

examination of work quality and style of the subject it did not offer a statistical analysis. Also the small number of subjects used in the study coupled with the relative short periods of time of actual training raises questions regarding the conclusions the authors offer for support of their hypotheses.

Sullivan's (1979) study investigated the effect of attention (meditation) training and relaxation training on reading, anxiety, and behavior of 191 third and fourth grade students. The groups were intact classes with a total of 64 in the attention group, 65 in the relaxation group and 62 in the control group. A total of 11 teachers were used as facilitators in the three groups. The attention exercises were, in effect, meditation exercises designed by the author from several sources. The relaxation exercises were adaptations of procedures used in the studies of Paul (1966) and Prochaska (1969).

Three instruments were utilized in assessing changes in the groups. The Stanford Diagnostic Reading Test, the Walker Problem Behavior Identification Checklist, and the Test Anxiety Scale for Children. Sullivan (1979) hypothesized that: (a) the mean scores of the subjects in the attention (meditation) training group would increase, on the Stanford Diagnostic Reading Test, to a degree significantly greater than the mean score of the subjects in either the relaxation training group or in the control group, (b) the

mean score of the subjects in the attention training group would decrease on the Test Anxiety Scale for Children, to a degree significantly greater than the mean score of the subjects in either the relaxation training group or in the control group; and (c) the mean score of the subjects in the attention training group would decrease on the Walker Problem Behavior Identification Checklist, to a degree significantly greater than the mean score of subjects in either the relaxation training group or in the control group.

The setting for this investigation was the regular classroom with the teacher serving as the administrator of the exercises. Exercises were conducted daily over an eight week period. A daily three-minute period was practiced for the first two weeks. The remaining six weeks included daily five minute exercises. The attention group practiced one exercise a day, while the relaxation group followed the progression of the muscle relaxation for each period.

Sullivan (1979) stated that his attention exercises directed the subjects to both inner and outer experiences. He accomplished this through exercises designed to listen for sounds both near and far and by attending or concentrating on objects outside the classroom and inside the classroom. Additionally, inner experiences were provided by breathing exercises with instructions to pay attention to feelings within the body as the breathing exercises

were carried out. The relaxation group followed the traditional program of first tensing the various muscles or parts of the body, becoming aware of the tension or feeling and then relaxing that muscle or part of the body.

The setting was the same for both groups, e.g. the regular classroom with the same initial instructions. Before the exercises, each group was instructed to close their eyes and sit up straight. The attention group was also involved in instructed breathing exercises during part of the sessions. While this was not a direct instruction in the relaxation group it can hardly be ignored. In progressive relaxation exercises, breathing becomes a focal point even in the absence of direct instruction. When individuals are tensing a particular body part or muscle they naturally do not breathe as they normally would. In so doing they become aware of not only tensed and relaxed muscle groups but also of breathing in, holding, and the feeling of letting the breath go (Hendricks & Wills, 1975).

Results indicated improvement for all three groups on the Stanford Diagnostic Reading Test and on the Test Anxiety Scale for Children. However, the first hypothesis was rejected as stated. Hypothesis three was also rejected although the relaxation group proved to be effective on subscales (2) withdrawal, (3) distractability, and (5) immaturity, of the Walker Problem Behavior Identification Checklist.

Linden's (1973) study of the practice of meditation by school children was performed in an economically disadvantaged neighborhood composed of Blacks and Puerto Ricans in approximately a 50:50 ratio. His first hypothesis was that the practice of meditation would enhance field independence. His rational was meditation practice can train individuals to center or focus their attention on an object or process and to resist distractions from other sources of stimulation. His second hypothesis dealt with the effects of meditation on the anxiety level of children, assuming that meditation practice can train a person to relax. Linden's third hypothesis stated that through its postulated effects on the subjects ability to focus attention and to lower test anxiety, meditation practice would be expected to enhance reading achievement.

A total of 90 subjects were used in the experiment, 15 boys and 15 girls, for each of the three groups. Both guidance and meditation groups began and ended during the same weeks with total time outside the classroom being the same for both groups The experimental (meditation) group received 36 training sessions, meeting twice a week for 20-25 minutes. The guidance group met 18 sessions, once a week for 45 minutes.

Linden (1973) had instructed the subjects to get into a comfortable position and to pay attention only to themselves.

> Try to keep your full attention within yourself. If your mind should go off the track and you find yourself watching or thinking something else, gently let go of what you are seeing or hearing and bring your attention back to yourself breathing. (p.41)

Following the initial instruction, Maupin's (1965) instructions for the breathing exercises were recited followed by instructions for visual fixation.

Analysis of covariance was performed to evaluate post test differences among the groups. Results of this study indicated that the meditation group gained on the measure of field independence, CEFT. Subjects in this group also had reduced scores on the TASC. Thus, the meditation group was statistically different on both the CEFT and TASC measures from both the guidance and control groups. The data did not support Linden's third hypothesis as there were no significant differences on the measure of reading achievement collected using the Metropolitan Achievement Test.

Summary

This chapter presented a review of the literature related to this study. The concept of field dependence/independence is examined and is described as a characteristic manner in which individuals organize their perceptual style and develop cognitive strategies for learning. Field dependent persons have been considered to be highly influenced by global aspects of their perceptual world while field independent people have been viewed

as differentiated, analytical, and less influenced by overall characteristics of the background. Conclusions offered by several authors (Culbertson & Wille, 1978; Flexer & Roberge, 1980; Keogh & Donlon, 1972) indicate the ability to maintain attention as well as cognitive style is important in academic performance.

In the discussion of the literature related to the relaxation modalities, it is established that relaxation training has been successfully applied to a wide variety of problems in both adults and children. Several investigators (Keogh & Donlon, 1972; Linden, 1973; Sullivan, 1979) researched the effect relaxation training modalities had on specific areas of academic functioning. Keogh and Donlon (1972) investigated the spatial-perceptual abilities of learning disabled boys. Other researchers, such as Linden (1973) and Sullivan (1979) investigated the effectiveness of attention training programs in producing change associated with reading tasks. The investigations reviewed dealt with elementary school children reading at grade level (Sullivan, 1979); students reading below grade level (Culbertson & Wille, 1978), children from an economically disadvantaged neighborhood (Linden, 1973) and children with mild to severe learning disabilities (Keogh & Donlon, 1972). The investigations pointed out that the techniques of relaxation training and focusing of attention have had an effect on distractibility and have been successful in reducing behavioral activity. Results

were varied in those studies which specifically researched the effect such techniques had on reading achievement.

CHAPTER III

METHODOLOGY

The research procedures are described in this chapter. The instruments, population and sample, data collection method, treatment process, and the statistical procedures used in the data analysis are discussed.

Instrumentation

Cognitive styles, field dependence and field independence, were measured using the CEFT (Witkin, Oltman, Raskin, & Karp, 1971). Reading levels were measured using the GRMT (Gates & MacGinitie, 1965).

The Children's Embedded Figures Test

The CEFT was designed to measure an individual difference dimension initially labeled by Witkin (1950) as field dependence/independence but more recently as psychological differentiation (Witkin, Dyk, Faterson, Goodenough, & Karp, 1962). Psychological differentiation is manifest in cognition by global versus articulated cognitive structuring, and in perception by field dependence/independence. The dimension of field dependence is seen as the extent to which reception of part of a stimulus field is influenced by the entire field.

The CEFT is an individually administered embedded figures test for children ages 5 to 12. The test has been used to assess

field dependence in developmental studies of psychological differentiation. The test series contain 25 items, preceded by 13 practice items. Test development relied on item analysis procedures only, selecting those items that discriminated between the highest and lowest scores on a large pool of potential items. Reliability and validity estimates were obtained from the standarization procedures conducted with boys and girls ranging in age from 5 to 12. No test-retest procedures were conducted by the test authors, but internal consistency reliability estimates were obtained for subjects ages 7 to 12. Internal reliability estimates range from .83 to .90.

The validity data reported was concurrent validity estimates using the Embedded Figures Test (EFT) (Witkin, 1950) as the criterion measure, and conducted only with subjects ages 9 to 12. Correlation between CEFT and EFT for the 11 and 12 year old was .83 to .86, for 9 and 10 year old subjects .70 to.73. Most of the reliable variance of the CEFT may be accounted for by common variance with the EFT. Additionally, CEFT performances were noted to improve with increasing age but were unrelated to sex.

Gates-MacGinitie Reading Test

The GMRT (Gates & MacGinitie, 1965) is designed for students from grade one through twelve. The development of the survey D level of this test is intended for grades four through six. There

are three subtests: Speed and Accuracy, Vocabulary, and Comprehension. The Speed and Accuracy subtest requires the reading of short paragraphs, all of similar difficulty. Each is followed by a simple multiple choice item measuring comprehension of the inferential type.

The comprehension subtest involves short paragraphs of increasing difficulty in which comprehension is measured by asking the student to choose appropriate words to fit two or three omissions in the paragraph. The vocabulary subtest requires the simple matching of a word with the correct synonym among five choices. Alternate-form reliabilities range from .78 to .89.

Concurrent validity coefficients were reported. The median coefficients were .78 for Survey D Vocabulary, and .80 for Survey D Comprehension.

Stanford Achievement Test

The Stanford Achievement Test (SAT) (Gardner, Rudman, Darlsen, & Merwin, 1982) is a group administered test for grades one through twelve. At all grade levels the test is concerned with measuring the outcomes of a core curriculum including spelling, language, reading, and arithmetic skills. All norms are based on the total enrollment in regular classes at each grade level. Four types of scores are used: grade, age, percentile, and stanine. For the standardization of the battery pupils in 109 stratified school systems from forty three states were tested.

All reliability data are in the form of split-half reliability coefficients, Kuder-Richardson estimates, and standard errors of measurement. The 134 split-half coefficients range from .66 to .95, with all but 13 being above .85. The Kuder-Richardson coefficients range from .71 to .96 with all but 15 being above .85 (Mehrens & Lehmann, 1969).

Content validity was stressed during the construction of the SAT. The authors (Gardner et al., (1982) state that a major goal was to insure that the test content would be in harmony with school objectives and would measure what is actually being taught in today's school.

Population and Sample

This investigation was conducted during the fall semester of the 1983-84 school year. The students for this study were drawn from a special reading class in a rural school district in north central Oklahoma. Demographic records (Tables I, II, & III) show that 48 or 87% of the study population is white, 4 or 6% is black and 4 or 6% is Native American. A total of 38 or 65% of the population is male and 22 or 35% is female. Age of students ranged from 10 years to 12 years with an average age of eleven years.

The school administration placed fifth and sixth grade students in a special reading class on the basis of their reading scores measured at the end of the 1982-83 school year. Students placed in the special reading program scored at or below the 50th

Table I

Demographic Data for students in Relaxation Group

Subject	Age	Sex	Race	Grade
1	11	M	C	6
2	11	F	C	6
3	11	F	C	6
4	12	M	C	6
5	11	F	C	6
6	11	M	C	6
7	12	M	C	6
8	11	M	C	6
9	11	F	C	6
10	10	M	C	5
11	11	M	I	5
12	10	M	C	5
13	10	F	C	5
14	10	M	C	5
15	10	M	C	5
16	11	F	I	5
17	10	F	C	5
18	11	M	B	6
19	11	F	C	6
20	12	M	B	6

C-Caucasian B-Black I-Indian

Table II

Demographic Data for students in Placebo Group

Subjects	Age	Sex	Race	Grade
1	11	M	C	6
2	12	M	C	6
3	11	M	C	6
4	11	M	C	6
5	11	M	C	6
6	12	M	C	6
7	11	M	I	6
8	11	M	C	6
9	11	F	C	6
10	12	F	C	6
11	11	M	C	6
12	10	F	C	5
13	10	M	C	5
14	10	M	C	5
15	10	F	B	5
16	11	M	C	6
17	11	M	C	6
18	11	M	C	5
19	11	F	C	6
20	12	F	C	6

C-Caucasian B-Black I-Indian

Table III

Demographic Data for students in Control Group

Subjects	Age	Sex	Race	Grade
1	12	F	C	5
2	10	M	C	5
3	11	F	C	6
4	11	F	C	6
5	10	M	C	5
6	10	M	B	5
7	11	M	C	5
8	10	F	C	5
9	11	F	C	6
10	10	M	C	5
11	11	M	C	6
12	12	M	C	6
13	11	M	C	6
14	10	F	C	5
15	10	M	I	5
16	11	M	C	5
17	11	M	C	6
18	12	F	C	6
19	11	M	C	5
20	12	F	C	5

C-Caucasian B-Black I-Indian

percentile on the reading portion of the SAT and were screened, by school district personnel, in order to remove those with identified learning disabilities or other handicapping conditions. The students were randomly selected from the program using simple random selection. Then the students were randomly assigned to one of the three treatment conditions: (a) the relaxation training group, (b) the placebo group, or (c) a control group. This selection and assignment method allowed assumption of equality of age, sex, and IQ and yielded an initial pool of approximately 100 students to allow for potential mortality.

In order to insure confidentiality and maintain professional integrity, individual permission forms were signed by each participant and their parent(s). Additionally, a letter containing information about the purpose of the study was presented to the parents (See Appendix A).

Treatment Procedures

The setting of the experimental room, for the relaxation training, conformed, as much as possible to the recommendation of Deikman (1963), that there be minimal distraction, and of Maupin (1965), that the room be dimly lit and sparsely furnished. The students in the experimental group received relaxation training as follows. The sessions occurred immediately prior to the start of the school day. Students met for one 20 minute period twice

weekly for a period of six weeks, a total of twelve sessions. For the purpose of this study, the relaxation technique consisted of muscle tension/release exercises as designed by Budzynski (1974) and followed by Lupin's (1972) visualization journeys. All sessions, with the experimental group, were presented by prepared professional tapes to insure uniformity. A summary of each sessions'content may be found in Appendix B. A preliminary session was held in order to briefly discuss when the group would meet, the student's responsibility in entering the sessions with a positive attitude and the need to be present at every session. The purpose of the group also was discussed, so the students could be familiar with relaxation methods and what relaxation means.

The students assigned to the placebo group received group counseling. The sessions occurred immediately prior to the start of the school day. Students met for one 20 minute period twice weekly for a period of six seeks, a total of twelve sessions. The sessions utilized a format which allowed the students to become more aware of their senses, social feelings and social skills. A variety of activities (Dupont, Gardner, & Brody, 1974) (See Appendix C). A preliminary session was held in order to briefly discuss when the group would meet, the students' responsibility in entering the sessions with a positive attitude and the need to be present at every session. Sessions for the experimental and placebo groups were conducted on Monday and Friday of each week.

Facilitators for the experimental and placebo group were the Special Education Director and the elementary school counselor. Facilitators were assigned to one of the two treatment groups for the first session using a random assignment method. Thereafter they were alternated with the groups each session.

Posttesting

During the first week following the last treatment session, the experimental, placebo, and control group members were administered the CEFT and the GMRT. Posttesting was conducted by the Special Education Director and school counselor at the school site.

Design of the Study

All students participating in this study were randomly assigned to one of the treatment conditions. Students in all of the three groups, relaxation (N=20), placebo (N=20), and control (N=20), were ranked from high to low achievement on the basis of percentile scores obtained on the SAT. The median percentile was identified and those students, in each of the three groups, falling above the median, relaxation (Mdn 24), placebo (Mdn 27), control (Mdn 28), were classified as high achievers and those falling below the median were classified as low achievers. The students' scores on the dependent measures, CEFT and the reading comprehension subtest of the GMRT, were then categorized by the achievement level of the students.

The design of the study is a modification of the Posttest-

only Control Group Design (Campbell & Stanley, 1963). The paradigm of the design is:

$$\begin{array}{lll} R & X_1 & O \\ R & X_2 & O \\ R & & O \end{array}$$

According to Gay (1976) this design controls for all threats to internal validity due to the combination of random assignment and the presence of a control group except for the threat of mortality. While mortality is a potential threat to validity with this design, it did not prove to be a threat in the present study since the group size remained constant throughout the duration of the study. Gay indicates that this design further controls for the threats to external validity.

Statistical Procedure

Two two-way analyses of variance were conducted to identify significant differences in field independence and reading comprehension due to the main effects of prior reading achievement level and of treatment group membership. An alpha level of .05 was used. Duncan's Multiple Range Test (Gay,1976), a post hoc comparison approach, was used to identify the pairs of group means which are significantly different when the F value for the main effect was significant in the overall analysis.

CHAPTER IV

RESULTS

This chapter presents the results of an analysis of variance of the variables, reading comprehension and field dependence/independence, in fifth and sixth grade students diagnosed as reading below grade level and at or below the 50th percentile on reading scores obtained on the Stanford Achievement Test. The statistical procedure used to test the hypotheses are presented and the results relevant to each hypothesis are presented.

Hypothesis I: There will be no differential effects of an experimental treatment (relaxation training), a placebo (group counseling), and no treatment on the reading achievement of students reading below grade level whose reading achievement is below the groups' median as measured by the Gates-MacGinitie Reading Test.

The means and standard deviations of each of the three groups' scores on the GMRT are reported for the combined achievement levels and for the groups identified as having high and low achievement levels in Table IV.

Inspection of the means for the two levels of achievement reveal that the subjects identified as scoring above the groups' median on the SAT scored significantly ($p < .01$) higher on the reading comprehension subtest ($\bar{X} = 32.6$) than did the subjects scoring below the median on the SAT ($\bar{X} = 27.0$).

Table IV

Mean and Standard Deviations of Scores on the Reading Comprehension Subtest, by Group and Achievement Level

Group	Relaxation	Placebo	Control	Combined
		High Achievement		
Mean	36.9	32.5	28.6	32.6
SD	5.26	8.17	7.71	7.72
		Low Achievement		
Mean	32.8	24.5	23.9	27.0
SD	6.41	9.44	6.12	8.31
		Combined Achievement Levels		
Mean	34.8	28.5	26.2	
SD	5.92	9.26	7.0	

The results of a two-way analysis of variance using the scores on the reading comprehension subtest of the GMRT are presented in Table V. The interaction between the main effects of group and achievement is not significant ($p > .05$). Therefore hypothesis one is not rejected. However, the main effects of group ($F = 7.425, df = 2/54, p < .05$) and of achievement ($F = 8.781, df = 1/54, p < .05$) are significant.

Table V

Analysis of Variance Results Using Scores On the Gates-MacGinitie Reading Test: Comprehension Subtest

Source of Variation	Sum of Squares	df	Ms	F
Group (A)	795.633	2	397.817	7.426*
Achievement (B)	470.400	1	470.400	8.781*
A X B	44.100	2	22.050	0.412
Error	2892.800	54	53.570	

* $p < .01$

The results of the Duncan's Multiple Range Test indicates that the subjects using the relaxation method ($\bar{X} = 34.8$) scored significantly ($p < .01$) higher on the reading comprehension subtest than did the group receiving the placebo of group counseling ($\bar{X} = 28.5$) or the control group ($\bar{X} = 26.2$).

Hypothesis II; There will be no differential effects of an experimental treatment (relaxation training), a placebo (group counseling), and no treatment on field dependence/independence of students reading below grade level whose reading achievement is above the groups' median and for those whose reading achievement is below the groups' median as measured by the Children's

Embedded Figures Test.

The means and standard deviations of each of the three groups' scores on the CEFT is reported for the combined achievement levels and for the groups identified as having high and low achievement levels in Table VI.

Table VI

Mean and Standard Deviations of Scores on the Children's Embedded Figures Test by Group and Achievement Level

Group	Relaxation	Placebo	Control	Combined
		High Achievement		
Mean	15.5	17.0	13.2	15.2
SD	2.32	3.46	1.69	2.97
		Low Achievement		
Mean	17.2	15.2	12.3	14.9
SD	5.57	.778	1.06	3.79
		Combined Achievement Levels		
Mean	16.4	16.1	12.8	
SD	4.13	2.54	1.41	

Table VII reports the results of a two-way analysis of variance using the scores on the CEFT. The interaction between the main effects of group and achievement is not significant

($p > .05$). Therefore hypothesis two is not rejected. However, the main effect of group ($F = 9.141, df = 2/54, p < .05$) was significant. The main effect of achievement ($F = 0.189$, df = $1/54$, $p > .05$) is not significant.

Table VII

Analysis of Variance Results Using Scores on the Children's Embedded Figures Test

Source of Variation	Sum of Squares	df	Ms	F
Group (A)	161.633	1	80.817	9.141*
Achievement (B)	1.667	1	1.677	0.189
A X B	33.033	2	16.517	1.868
Error	477.400	54	8.841	

*$p < .05$

The results of the Duncan's Multiple Range Test indicates that the group using relaxating training ($\bar{X} = 16.4$) and the placebo group ($\bar{X} = 16.1$) scored significantly ($p < .05$) higher on the CEFT than did the control group ($\bar{X} = 12.8$).

Summary

In summary, the results of the analyses of variance on the

variable of reading comprehension indicate the interaction between the main effects of group and prior reading achievement level is not significant. However, the main effects of both group and achievement is significant. Using Duncan's procedure as a post hoc test, it is found that the fifth and sixth grade students participating in the relaxation training group scored significantly higher than did the placebo and control groups on the variable reading comprehension. However, no significant difference between the effects of group counseling or no treatment on reading comprehension was identified. When the two levels of achievement were examined it was determined that those subjects scoring above the median on the Stanford Achievement Test scored significantly higher on the reading comprehension subtest than did the subjects scoring below the median.

Regarding the variable of field dependence/independence, the interaction between the main effects of group and prior reading achievement level is not significant. The main effect of group is significant while the main effect of achievement is not significant. The results of the post hoc procedure indicates the relaxation training group and the placebo group scored significantly higher on the variable CEFT than did the control group. No significant difference between the effects of relaxation training and group counseling on field dependence/independence was identified.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The purpose of this study was to investigate the effect of a six week relaxation training program on the perceptual style and reading comprehension level of fifth and sixth grade students, identified as reading below grade level, who scored at or below the 50th percentile on the reading subtest of the Stanford Achievement Test.

A total of 60 fifth and sixth grade students attending one elementary school located in a northcentral Oklahoma community, were subjects for this study. All fourth and fifth grade students were administered the Stanford Achievement Test at the end of the Spring, 1983, school year. Those scoring at the 50th percentile or lower were placed in a special reading program during the 1983-83 school year. Students were randomly selected from this program and randomly assigned to one of three groups. A relaxation training group (N=20), a placebo group (N=20) or a control (N=20). Students in each group were ranked from high to low on the basis of percentile scores obtained on the Stanford Achievement Test. The medians of 24th, 27th, and 28th percentile were identified for the relaxation training group, placebo group and control group, respectively. Students, in each group,

falling above the median were classified as having high achievement and those falling below the median as low achievement for purposes of this study. The treatment group met twice a week for six weeks and received relaxation training as outlined by Budzyski (1974) and Lupin (1972). The placebo group met twice a week for six weeks and received structured group counseling. A variety of activities were used in working with this group. The students in the control group maintained their regular school schedule during the experimental study.

Reading comprehension was measured by the comprehension subtest of the GMRT and field dependence/independence was measured by the CEFT. Two-way analysis of variance and Duncan's Multiple Range tests were used to analyze the data. The alpha of .05 was established to identify significant differences among groups on the two dependent variables.

The results of this study indicate that children reading at a particular level, although below grade level, may, following treatment, achieve higher reading scores yet maintain their advantage or disadvantage in reading ability. Additionally, the analysis of post hoc test shows the obtained mean of the Children's Embedded Figures Test scores of the relaxation training group and the placebo group are significantly higher than the mean score of the control group.

Conclusions

The following conclusions are drawn based on the results of this study. The study indicated the experimental group to have achieved higher reading scores while maintaining their relative position in reading ability. 1. One explanation for this result may be on developmental grounds. Polk and Goldstein (1980) matched 15 early readers with 15 non-early readers. The 30 children were given a battery of six standard Piagetian measures of concrete operations. Early readers scored significantly higher than the non-early readers indicating a faster developmental rate of growth in the area of concrete operations. Subsequent follow-up reading achievement scores indicated the early readers were maintaining their initial advantage in reading ability.

Another explanation may be found in the manner in which this study was designed. All students in this research were identified as reading below grade level and were divided into high and low achievement on the basis of percentile scores. All percentile scores were 50 or less with actual percentile scores ranging from 3 to 48. The median in each group was calculated to be in the mid to high twenties. Consequently there was a greater range between scores of those in the low achievement level.

The results of the post hoc test shows that the obtained mean reading comprehension scores of the relaxation training group

are significantly higher than the placebo or control group scores. Significant differences between the effects of group counseling or no treatment on reading comprehension were not identified. The results of this investigation agrees with past research (Linden, 1973; Culbertson & Wille, 1978, Sullivan,1979). The higher scores in reading comprehension may be attributed, in part, to the students learning to focus their attention. The practice of progressive relaxation teaches several things. Breathing becomes a focal point. The tensing of a particular body part permits the student to not only focus attention to that body part but to become aware of breathing in, holding, and the feeling of letting go. In effect, this teaches the student to focus on internal stimuli and to ignore external stimuli. This learning process may have then been transferred to other situations such as reading comprehension. The increase may be be attributed to the students' ability to focus attention thus lessening the negative effects of distractibility.

2. In addition, the investigation indicated both the relaxation group and the placebo group to have achieved higher scores on the Children's Embedded Figures Test. The higher scores on the CEFT by the students in the relaxation training group is supported by previous research. Linden's (1973) study utilized a meditation group with techniques designed to allow the student both inner and outer experiences of attention training. This group made significant ($p < .05$) gains on the measure of field independence.

Culbertson & Wille's (1978) investigation also indicated gains on the measure of field independence for all students in the study.

The higher scores on the measure of field independence by the placebo (counseling) group of the current study was not totally unexpected. Linden's (1973) investigation also had a guidance group which made gains on the measures of both field independence and reading achievement but the gains were not significant. The higher scores in both the relaxation training group and placebo group in the measure of field independence may be explained in part by the exercises used. Both groups were exposed to exercises which were both tangible and concrete. However, the placebo group participated in exercises designed to make them more aware of their senses and in the teaching of social feelings and skills. Such awareness may have had a similar effect of relaxation training which permitted the students to be more attentive.

RECOMMENDATIONS

1. This study should be replicated in order to establish more clearly the role of perceptual style in children reading below grade level.

2. The grade levels used in this study were fifth and sixth. Further studies should use students in lower and higher grades.

3. Further related research needs to examine relaxation programs of longer duration which may demonstrate greater effects

on the more complex areas of reading achievement as a whole, as well as changes in the field dependent/independent continuum.

4. The current study utilized Lupin's (1973) visualization journeys as a follow-up technique. The need for particular types of follow-up exercises could be explored in future research.

5. Research should be conducted to determine which relaxation exercises are more appealing for children in various age groups. Both facilitators noted that some exercises were more enjoyable for the students than other exercises.

6. Research should be conducted to determine which relaxation exercises are more effective for children in various age groups.

7. This study examined the differences between means of groups. Further studies should examine differences in individual scores.

References

Benson, H., Beary, J. F., & Carol, M. P. (1974). The relaxation response. Psychiatry, 37, 37-46.

Briggs, C, & Elkind, D. (1973). Cognitive development in early readers. Developmental Psychology, 9, 279-280

Budzynski, T. H. (1974). Relaxation training program (Cassette). New York, New York: Biomonitoring Applications.

Campbell D. T. & Stanley J. C. (1963). Experimental and quasi-experimental designs for research. Chicago.

Carter D. T. & Synolds, D. (1974). Efeects of relaxation training upon handwriting quality. Journal of Learning Disabilities, 7, 53-55.

Culbertson, F. M. & Wille. G. (1978). Relaxation training as a reading remediation tool for school-age children. Canadian Counselor, 12, 128-131.

Davis, J. K. & Frank, B. M. (1979). Learning and memory of field independent-dependent individuals. Journal of Research in Personality, 13, 469-479

De Hirsch, K. (1964-65). Potential educational risks. Childhood Education, 41, 178-183

Deikman, A. J. (1963). Experimental meditationl Journal of Nervous and Mental Disease, 136, 329-343.

Dupont, H., Gardner, O. S., & Brody, D. S., (1974). Toward Affective development. Circle Pines, MN: American Guidance Service.

Flexer, B. K. & Roberge,J. J. (1980). IQ, field dependence-independence and the development of formal operational thought. The Journal of General Psychology, 103, 191-201.

Frostig, M. (1963). Visual perception in the brain-impaired child. American Journal of Orthopsychiatry, 33, 665-671.

Gale, A. & Lynn, R. (1972). A developmental study of attention. British Journal of Educational Psychology, 42, 260-266.

Gardner, E. F., Rudman, H. C., Darlsen, B. & Merwin, J. C. (1982). Stanford Achievement Test Manual. New York: The Psychological Corporation.

Gates, A. I. & MacGinitie, W. H. (1965). Gates-MacGinitie Reading Test. New York: Teachers College Press.

Gay, L. R. (1976). Educational research: Competencies for analysis and application. Columbus, Ohio: Charles E. Merrill Publishing Company.

Gershman, L. & Glouser, R. A. (1974). Treating insomnia with relaxation and desensitization in a group setting by an automated approach. Journal of Behavior Therapy and Experimental Psychiatry, 5, 31-35.

Gill, N. T., Herdtner, T. J., & Lough, L. (1968). Perceptual and socioeconomic variables, instruction in body orientation,

and predicted academic success in young children. Perceptual and Motor Skills, 26, 1175-1184.

Haynes, S. N., Woodward, W., Moran, R., & Alexander, D. (1974). Relaxation treatment of insomnia. Behavior Therapy, 5, 555-558.

Hendricks, G., & Wills, R. (1975). The centering book. New Jersey: Prentice-Hall.

Jacobson, E. (1938). Progressive relaxation. Illinois: Chicago Press.

Jacobson, E. (1957). You must relax. New York: McGraw-Hill.

Jacobson, W. (1964). Anxiety and tension control: A psysiologic approach. New York: J. B. Lippencott.

Jacobson, W. (1970). Modern treatment of tense patients. Springfield, Illinois. Thomas.

Kagan, J. (1964). Information processing in the child. Significance of analytic and reflective attitudes. Psychological Monographs, 78, (1, Whole No. 578).

Keogh, B. K. (1971). Hyperactivity and learning disorders. Review and speculation. Exceptional Children, 38, (2). 101-110.

Keogh, B. K. (1971). Pattern copying under three conditions of an expanded spatial field. Developmental Psychology, 4, 25-31.

Keogh, B. K., & Donlon, G. Mc G. (1972). Field dependence,

impulsivity, and learning disabilities. Journal of Learning Disabilities, 5, (6), 331-336.

Kephart, N. C. (1960). The slow learner in the classroom. Columbus, Ohio : Charles E. Merrill.

Klein, S. A. & Deffenbacker, J. L. (1977). Relaxation and exercise for hyperactive impulsive children. Perceptual Motor Skills, 45, 1159-1162.

Kuhn, D., & Angelev, J. (1976). An experimental study of the development of formal operation thought. Child Development, 47, 697-706.

Lawson, A. E., & Nordland, F. H. (1976). The factor structure of some Piagetian tasks. Journal of Research Science Teacher, 13, 461-466.

Linden, W. (1973). Practicing of meditation by school children and their levels of field dependence-independence, test anxiety, and reading achievement. Journal of Consulting and Clinical Psychology, 41, 139-143.

Lupin, M. (1972). Peace, Harmony, Awareness (Audiocassettes No. 96-101). Hingham, Mass.: Teaching Resources.

Luthe, W. (1969). Autogenic training: Method, research, and application in medicine. In C. T. Tart (Ed.) Altered states of consciousness. New York, New York. John Wiley & Sons.

Martorano, S. C. (1977). A developmental analysis of performance

on Piaget's formal operational tasks. Developmental Psychology, 13, 666-672.

Maupin, E. W. (1965). Individual differences in response to a Zen meditation exercise. Journal of Consulting Psychology, 29, 139-145.

McKim, R. H. (1973). Relaxed attention. The Journal of Creative Behavior, 42, 265-276.

Messich, T. M. (1969). The criterion problem in the evaluation of instruction: assessing possible not just intended outcomes. (Rep. No. 22). Los Angeles: University of California. Center for the Study of Evaluation.

Miller, P. M. (1972). The use of visual imagery and muscle relaxation in the counter-conditioning of a phobic child: A case study. Journal of Nervous and Mental Disease, 154, 457-460.

Mussen, P. H., Conger, J. J.,& Kagan, J. (1963). Child development and personality. New York· Harper and Row.

Noland, E. & Schuldt, W. (1971). Sustained attention and reading retardation. Journal of Experimental Education, 40, 73-76.

Otis, L S. (1974). The facts on transcendental meditation: If well-intentioned but anxious, try TM. Psychology Today, pp. 70-76.

Patel, C. (1977). Biofeedback aided relaxation and meditation in

the management of hypertension. Biofeedback and Self-Regulation, 2, 1-41.

Paul, G. L. (1966). Insight versus desensitization in psychotherapy: An experiment in anxiety reduction. Stanford: Stanford University Press.

Pelletier, K. R. (1977). Mind as healer, mind as slayer. New York: Dell Publishing Co.

Polk, C. L. H. & Goldstein, D. (1980). Early reading and concrete operations. The Journal of Psychology, 106, 111-116.

Prochaska, Jo O. (1969). Symptom and dynamic cues in the implosive treatment of test anxiety. Dissertation Abstracts International, 32, 3031B-3014B. (University Microfilms No. 71-29,976).

Ribordy, S. E. & Denney, D. R. (1977). The behavioral treatment of insomnia: An alternative to drug therapy. Behavioral Research and Therapy, 15, 39-50.

Roberge, J. J. & Flexer, B. K. (1979). Further examinations of formal operational reasoning abilities. Child Development, 50, 478-484.

Rugg, H. (1963). Imagination. Harper.

Russell, R. K., Miller, D. E., & June, L. N. (1974). Group controlled relaxation in the treatment of test anxiety. Behavior Therapy, 5, 572-573.

Selye, H. (1974). Stress without distress. Philadelphia: J. B. Lipincott.

Stuart, I. R. (1967). Perceptual style and reading ability: Implications for an instructonal approach. Perceptual and Motor Skills, 24, 135-138.

Sullivan, R. H. (1979). Reading, anxiety and behavioral management as functions of attention and relaxation training. (Doctoral dissertation, University of Missouri, 1979). Dissertation Abstracts International, 39, 2265A.

Tanner, J. M. (1961). Education and physical growth. London. University London Press.

Walker, C. E. (1975). Treatment of children's disorder by relaxation training: The poor Man's biofeedback. Unpublished manuscript, University of Oklahoma Medical School, Oklahoma City, Oklahoma.

Watson, B. L. (1969). Field dependence and early reading achievement. Unpublished doctoral dissertation, University of California, Los Angeles.

Weissberg, M. (1975). Anxiety-inhibiting statements and relaxation combined in two cases of speech anxiety. Journal of Behavior Therapy and Experimental Psychiatry, 6, 163-164.

Whatmore, G. & Kohli, D. (1968). Dysponesis: A neurophysiological factor in functional disorders. Behavior Science, 13, 102-124.

Witkin, H. A. (1950). Individual differences in ease of perception of emvedded figures. Journal of Personality, 19, 1-15.

Witkin, H. A., Dyk, R. B., Faterson, H. F., Goodenough, D. R., & Karp, S. A. (1962). Psychological differentiation. New York: Wiley and Sons.

Witkin, H. A. (1965). Some implications of research and cognitive style for problems of education. Archivo de Psicologia, Neurologia e Psichitria, 26, 27-55.

Witkin, H. A., Goodenough, D. R., & Karp, S. A. (1967). Stability of cognitive style from childhood to young adulthood. Journal of Personality and Social Psychology, 7, 291-300.

Witkin, H. A., Moore, C. A., Goodenough, D. R., & Cox, P. W. (1977). Field-dependent and field independent cognitive styles and their educational implications. Review of Educational Research, 47, 1-64.

Witkin, H. A., Oltman, P. K., Raskin, E., & Karp, S. A. (1971). Manual for the Embedded Figures Test. Palo Alto, CA.: Consulting Psychologists Press.

APPENDIX A

PARENTAL PERMISSION LETTER

Dear Parent,

Our children today are truly fantastic individuals. They are expected to learn more facts, accept more responsibility and be a contributing member of our society. Often the desire to please, competition, bombardment of environmental noise, etc. cause us to tense up and we lose the ability to relax completely. At some age we may even develop stress reactions such as fingernail biting, poor attention span, headaches and possibly high blood pressure or ulcers.

This year, Perry Elementary School, in cooperation with Mr. Wayne Brooks, a graduate student at Oklahoma State University, will offer a twelve week relaxation training program. Two groups will be working at the same time. One group will engage in counseling sessions while the other group will learn the skills of muscle relaxation.

At this time your child has the opportunity to learn relaxation skills in an effort to increase their learning potential. With your permission, your child will be randomly placed in one of the two groups.

_____ has permission to participate in the Relaxation Program.

Signed_____
Parent/Guardian

APPENDIX B

EXPERIMENTAL ACTIVITIES

Session One:

The object of this session is to allow you to develop a "muscle sense" or awareness of feelings of tension and relaxation in your muscles. In other words, you should be able to say what the tension feels like and just where you feel it. Additionally, you should be able to tell someone what your muscles feel like when they are relaxed.

Session Two:

This exercise is designed to give you practice at relaxing some muscles while others are tensed. Examples would be while writing at your desk, reading in your class or eating lunch. You should try to use these relaxation skills no matter what activity you are engaged. Try to relax those muscles you do not need to use.

Session Three:

This exercise, together with the next two sessions, will deal with the use of auto-suggestive phrases that will allow you to relax very deeply. There will be no muscle tensing but you will have to become aware of small sensations in the muscles.

Sessions Four:

This exercise will focus on the feelings of warmth in the arms and legs, although it will be felt primarily in the hands. As you listen to the tape and repeat the phrases, examine closely the

webbing between each finger. The warmth is quite often felt here first. Remember, it is important to just to let it happen rather than trying to make it happen.

Session Five:

Muscles of the face are among the most difficult ot relax. While listening to this tape be sure to keep your jaw relaxed. Keep your teeth apart although you may wish to keep your lips together in order to prevent mouth dryness.

Session Six:

Now that you know how to relax generally you can begin to work on those situations that cause you undue stress or anxiety. You can use your imagination and visualize yourself performing well in these situations while remaining relaxed. This exercise will have you focus on relaxing first and then it will alternate silent spaces with relaxation instructions. During the silent periods, visualize yourself in these tough situations; however, "see yourself" using the phrases, relaxing your muscles, warming your hands and generally coping well.

Session Seven.

This exercise will give you more relaxation training in helping you become more aware of your muscles and body parts.

Session Eight:

In this exercise you will practice your relaxation skills and you will be hearing thoughts on the old me and the new me.

Session Nine:

This exercise will let you relax and then we will take a trip to a star. You will be able to visualize the journey.

Session Ten.

Today you will take another journey. This exercise will help you visualize a trip to the beach.

Session Eleven.

Today we will visualize a trip to the woods.

Session Twelve.

This is our last session. This exercise will help you visualize a trip to the Colorado mountains.

APPENDIX C

PLACEBO ACTIVITIES

Session One·

Purpose: To encourage student participation and to help students learn to participate on cue. Use lesson one in "Toward Affective Development".

Session Two:

Purpose: To practice asking permission to participate in a group discussion and to encourage students to share and discuss experiences and feelings. Use lesson two in "Toward Affective Development".

Session Three.

Purpose· To provide experience working together in groups and to encourage concentrated listening. Use lesson seven in "Toward Affective Development".

Session Five:

Purpose: To increase students' awareness of their senses of sight, sound, touch, taste, and smell and how they experience the world through these senses. Use lesson twenty four in "Toward Affective Development".

Session Six.

Purpose To increase students' awareness of the feelings and associations aroused through sight. Use lesson twenty nine in: "Toward Affective Development".

Session Seven:

Purpose: To increase students' awareness of the feelings and

association aroused through sound. Use lesson thirty in "Toward Affective Development".

Session Eight:

Purpose: To help students become more aware of what they can hear and to develop perceptive listening skills. Use lesson thirty two in "Toward Affective Development".

Session Nine:

Purpose: To increase students' awareness of the feelings and associations aroused through touch and to introduce students to the notion that one sense modality can affect another. Use lesson thirty three in "Toward Affective Development".

Session Ten:

Purpose To increase students' awareness of the feelings and associations aroused through smell and to increase students' awareness that one sense modality can affect other modalities. Use lesson thirty four in "Toward Affective Development".

Session Eleven.

Purpose· To increse students' awareness of the feelings and associations aroused through taste and to increase students' awareness that the senses are interdependent. Use lesson thirty five in "Toward Affective Development".

Session Twelve·

Purpose: To encourage and reinforce students' use of imagination. Use lesson forty four in "Toward Affective Development".

VITA

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Candidate for the Degree of

Doctor of Education

Thesis: EFFECT OF RELAXATION TRAINING ON LEVELS OF FIELD DEPENDENCE-INDEPENDENCE AND READING ACHIEVEMENT OF ELEMENTARY SCHOOL CHILDREN

Major Field: Counseling and Student Personnel

Biographical:

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